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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,047	07/24/2003	Yoshikazu Kato	112857-412	4039

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BELL, BOYD & LLOYD, LLP
P. O. BOX 1135
CHICAGO, IL 60690

EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary

Application No.

10/628,047

Applicant(s)

KATO ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/21/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) 4-8 and 12-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,9 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

This Office Action is in response to the communication filed on 11/21/06. Applicant's arguments have been considered, but are not persuasive. Claims 1, 3-9 and 11-16 are pending. This Action is made FINAL, as necessitated by amendment.

Election/Restrictions

Claims 4-8 and 12-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/12/06.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al., US 6,632,566 in view of Marugan et al., US 6,455,202 and/or in view of Yoshino et al., US 5,631,100.

Yamada teaches a nonaqueous electrolyte secondary battery comprising a positive electrode containing a $\text{Li}_x\text{M}_y\text{PO}_4$ compound (abstract). The $\text{Li}_x\text{M}_y\text{PO}_4$ compound has an olivine structure and M is at least one of 3d transition metals (5:14-20). Yamada teaches a specific example wherein M is Fe (iron) at column 6, lines 5-38. The battery further comprises a negative electrode and electrolyte (4:46-55). As a binder contained in the positive electrode

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active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45).

Yamada does not explicitly teach a binder comprising a rubber latex and a thickener.

However, Marugan teaches a positive electrode for a lithium rechargeable electrochemical cell wherein the electrode comprises a paste containing both an electrochemically active material and a binder (abstract). The binder may comprise an elastomer and a cellulose compound (thickener). The elastomer is preferably selected from SBR or NBR (synthetic rubber latex adhesive). In a first embodiment, the binder includes a SBR elastomer and a carboxymethylcellulose cellulose compound (3:1-21). The binder contains 30-70% by weight of said cellulose compound relative to the sum of the weight of said elastomer plus the weight of said cellulose compound (3:27-29). Examples 4-6 are analogous to Examples 1-3 with the exception that the binder comprised 2% by weight of NBR in suspension at 41% by weight in water and 2% by weight of salified carboxymethylcellulose in solution at 2% in water. The positive electrode includes 86% of active material, 8% by weight of a carbon-based conductive material and 6% by weight of the binder (8:34-67). The cell includes a negative electrode (3:59-67) and an electrolyte (4:6).

Furthermore, Yoshino teaches a secondary battery comprising an a lithium-containing composite metal oxide cathode active material, a negative electrode and an electrolyte (abstract). The cathode active mixture contains 0.1-20 pbw, preferably 0.5-10 pbw of a binder material based on 100 pbw of the electrode active material. The binder preferably comprises a styrene-butadiene latex (7:6-14). When a water-soluble polymer, such as styrene-butadiene latex is used as a binder, a water-soluble thickener may be added as an additive thereto in an amount of 2-60

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pbw per 100 pbw of the solid value of the styrene-butadiene latex. Examples of water-soluble thickeners are carboxymethylcellulose and methyl cellulose (8:8-17). The cathode may contain 5 pbw of carbon material (graphite + acetylene black) to 100 pbw of positive active material (Examples). The battery exhibits a high voltage operative at a voltage of from 2.6 to 3.5 V (12:10-40).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the known binder of Marugan or the known binder of Yoshino for the positive electrode binder of Yamada. Yamada teaches as a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45). Both Marugan and Yoshino are directed toward nonaqueous batteries with positive electrode binders containing rubber latex adhesive and a thickener.

Response to Arguments

Applicant's arguments filed 11/21/06 have been fully considered but they are not persuasive.

Applicant argues neither Marugan or Yoshino disclose a lithium iron phosphorous oxide cathode active material having an olivine structure. Applicant further argues Yamada fails to provide a binder that includes a rubber latex adhesive and a thickener. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231

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USPQ 375 (Fed. Cir. 1986). Applicant has not addressed the Examiner's motivation for combining the references. One of skill would have been motivated to use the known binder of Marugan or the known binder of Yoshino for the positive electrode binder of Yamada. Yamada teaches as a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45). Both Marugan and Yoshino are directed toward nonaqueous batteries with positive electrode binders containing rubber latex adhesive and a thickener.

Applicant refers to the experiments in the present specification, pages 13-19. It is unclear how the experiments relate to the rejection of record. Specifically, the prior art renders the claimed invention obvious because the prior art suggests a positive electrode comprising a lithium iron phosphorous active material and a rubber latex adhesive/thickener binder.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 24, 2007



TRACY DOVE
PRIMARY EXAMINER